MAKLUMAT PROGRAM

Tajuk/ Nama Kursus/ Nama Program	**Small Unmanned Aircraft**
Sinopsis	Unmanned aircraft systems (UAS) are playing increasingly prominent roles in defense programs and defense strategy around the world. Technology advancements have enabled the development of both large unmanned aircraft (e.g., Global Hawk, Predator) and smaller, increasingly capable unmanned aircraft (e.g., Wasp, Nighthawk). As recent conflicts have demonstrated, there are numerous military applications for unmanned aircraft, including reconnaissance, surveillance, battle damage assessment, and communications relays.
Hasil Pembelajaran (Learning Outcomes)	1. Enable participants to develop a comprehensive understanding of unmanned aircraft systems (UAS) and their applications. 2. Ability to design and implement a complete end-to-end flight simulator, covering aspects such as realistic flight dynamics, sensor models, autopilot design, and path planning.
Mod Pengajian (Delivery Mode)	Lectures/ Presentation
Tempoh (Duration)	4 working days **2nd – 5th September 2024**
Kumpulan Sasaran (Target Participant)	Junior and Senior Executive
Syarat Kemasukan (Admission Requirement)	Nil
Struktur Kursus (Course Outline) / Struktur Kurikulum (Topics Covered)	**Day 1** 1. Course Introduction - lecture 1 2. Introduction to UAV - lecture 2 3. Coordinate Frames - lecture 3 and 4 4. Reconfiguration of RC aircraft - exercise 1 5. Kinematics and Dynamic - lecture 5 **Day 2** 1. Kinematics and Dynamics - lecture 6 2. **Forces and Moments -** lecturer 7 and 8 3. Programing of Autopilot - exercise 2 **Day 3** 1. **Linear Design Models** - lecture 9 2. Autopilot Design - lecture 10 and 11 3. Calibration and Flight Test - lecture 12 **Day 4** 1. Sensors - lecture 13 2. **State Estimation** - lecture 14 3. **Nonlinear Design Model** - lecture 15 4. Waypoint and Orbit Following - exercise 3 5. Path Planning - lecture 16 6. Path Manager - exercise 4
Yuran Kursus (Course Fee)	**RM1,500.00 per participant**

Facilitators

Associate Prof. Lt Col Mohamed Tarmizi bin Ahmad TUDM (Retired) graduated with MSc (Applied Flight Mechanics-Aerodynamics), University of Cranfield and BSc Hons 2nd Class Upper (Aeronautical Engineering), Kingston University, UK. Also Qualified PPL pilot with flying experiences in single and twin-engine aircraft.

As a former Air Force aeronautical engineer he led the depot, intermediate, and line maintenance operations for fighter aircraft, transport aircraft, and helicopters and ensuring aircraft safety and operational readiness. Supervised and trained a team of aeronautical engineers and technicians, enhancing their skills and performance. Implemented quality assurance and safety compliance measures, implementing threat errors management and safety management system.

As a former CEO SME Aviation/Director SME Inc. USA, he established and led a successful aviation company that specialized in light aircraft design and manufacturing. Secured contracts and funding from various sources, including the Malaysian government. Oversee the operations, finances, and marketing of the company, ensuring profitability and growth. Expanded the company's presence and reputation in the global aviation market, securing partnerships and collaborations with leading aerospace firms.

As an Associate Processor UTM/ UPM/ UPNM he played a pivotal role in teaching and supervising undergraduate and postgraduate students, imparting industry knowledge and nurturing future aviation professionals. Conducted research and innovation projects in various areas of aeronautical engineering, such as rocket propulsion, aircraft tracking, and flight laboratory and flight simulator. Published and presented findings in reputable journals and conferences, advancing the field of aviation science.

Dr. Elya binti Mohd Nor is the Research Fellow in Centre of Defence Research and Technology (CODRAT). She is also a Senior Lecturer in Faculty of Engineering, UPNM. She graduated from Universiti Teknologi PETRONAS, Tronoh, Perak with a Bachelor of Engineering (Honours) in Electrical and Electronics Engineering in 24 August 2003. After graduation, she was employed by Malaysian Shipyard Engineering (MSE) which is now called (MMHE) serve as Technical Executive (Electrical & Instrument), in the Project Department, Engineering Division from June 2003 until October 2003. She was then employed by PETRONAS as Instrument Engineer in Maintenance and Engineering Department in Gas District Cooling (GDC) KLIA plant from October 2003 until April 2006. In April 2006, she was transferred to PETRONAS Carigali Sdn Bhd serve as Risk Management Executive in the Project Management department because GDC was outsourced from PETRONAS to Makhostia Sdn Bhd.

Due to her high interest in teaching and keeping herself in the technical line particularly in the Instrumentation & Control discipline, she transitioned from industry to academic in June 2006, where she joined German-Malaysian Institute (GMI) serving as Technical Training Officer in

the Process Instrumentation & Control section, Electrical Department. She was also keen to pursue higher degree and focusing on advanced research and continuous life-long learning. Therefore in September 2008, she served as Tutor in Electrical & Electronics Department, Faculty of Engineering in Universiti Pertahanan Nasional Malaysia (UPNM). She further her studies at Universiti Kebangsaan Malaysia (UKM) and completed her Master degree in Communication and Computer Engineering. She obtained her PhD from Universiti Putra Malaysia (2019). Her research interest is on vibration monitoring of rotating systems and robust control of UAV and underwater vehicle

Muhammad Shafiq Bin Abu Mansor graduated with Bachelor of Aircraft Engineering Technology (Hons.) in Mechanical, UniKL Malaysian Institute of Aviation Technology, Sepang (2013-2017). Certified Approved Remote Pilot Training Organisation (ATO-RPTO) by Drone Academy Asia. Expertized in flying drone either DJI or FPV with flight time above 230 hours.

As a former Engineer Verticality and Drone Pilot at Aerodyne Group from October 2017 to July 2020. He specialized in aerial inspections and data analysis. He managed a team for about a year. His primary responsibilities included conducting thorough inspections of Aerial Bundle Cable (ABC) and bare powerlines for Tenaga Nasional Berhad (TNB). He was deeply involved in data processing and analysis, utilizing various applications to interpret visual and thermal images. He also became proficient in using FLIR thermal imaging tools, earning a Level 1 Thermal Certification, which allowed him to conduct precise thermal analysis.

His experience extended to international projects, where he worked on stitching and analyzing wind turbine images from Denmark and Australia. During the COVID-19 Movement Control Order (MCO), he volunteered with the Polis Diraja Malaysia (PDRM) in Terengganu, assisting in patrol duties. He also exposed in handling, maintaining and trouble shoot RedBird flight simulator approved by Federal Aviation Administration (FAA). Finally, he handled programs as facilitator and instructor for drone workshops.

As a former Drone Pilot at De Tmax Engineering from August 2020 to December 2021. He was responsible for conducting Condition-Based Monitoring (CBM) inspections of Aerial Bundle Cable (ABC) and bare powerlines for Sabah Electricity Sdn Bhd (SESB) in Sabah. In this role, he led the operation team during UAV flights, ensuring that the inspections were carried out efficiently and safely. He also managed communication with SESB clients, discussing site conditions and preparing daily reports that detailed any issues identified during the inspections.

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